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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,659	02/06/2004	Sau Ching Wong	MLM006US1P	7522
20987	7590	11/01/2005	EXAMINER	
VOLENTINE FRANCOS, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			PHAN, TRONG Q	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,659

Applicant(s)

WONG, SAU CHING

Examiner

TRONG PHAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/14/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Data I/O, Column Decoders & Selects, Vvfy/VR, Vpp and ROW DECODERS & DRIVERS 160 in Fig. 1; Data I/O, Col Dec & SeL, Vvfy/VR, Vpp, Global Row Decoder & Drivers 260 and Local Row Decoders and Drivers in Figs. 2 and 11; Thi' in Figs. 3B-C; $\Delta V_t \sim 1V$, @ and "Vt Saturation" Region in Fig. 4; @ in Figs. 7A-B; Vppmax and VppTyp in Figs. 8B-F; ΔV_{pp1} , ΔV_{pp2} , DL10 and VW4 in Fig. 10A; ΔV_{pp1} and DL10 in Fig. 10B; 1210 in Fig. 12A; D0, D1, D30, D31, Ref I/O Lines, Write & Read Control Logic, I/O Line #1, I/O Line #16, VR, Vpp, Col. Dec & Pass, OTP & Ref. X Dec. & Drivers and X Decoders & Drivers in Fig. 13; Multi-Level verify/Read Circuits 1440, LV-HV Converter, D3HH, D2HH, Column Select N, Source Bias Disable, 1454, 1456, PGM, VFY+READ and VFY+Read+Source Bias Disable in Fig. 14. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: programming cycles 318 (lines 2 and 8, page 15); Vt1 (lines 9-10, 15, 18, 21 and 28, page 16; lines 27-28, page 17; lines 2 and 6-7, page 18; last line of page 19; lines 3 and 11, page 20; line 25, page 21; lines 8 and 13, page 23; line 7, page 24); Vt2 to Vt15(throughout the specification); Vpp1', Vpp2' and Vpp3' (lines 23-24 and 28, page 19; lines 1 and 7, page 20; line 9, page 21); Column Line Voltage Vw/SL Voltage Vs (Table 1, page 27); 1040 (line 14, page 31); I0, I1, I2 and I3 (line 16, page 31); VSL0 and VSL3 (line 3, page 32); 1300 (line 2, page 35); 0volts, Vw1, vw2, Vw3 and Vw4 (last line, page 36); 111b and 0000b (line 3, page 37). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features as recited

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in claims 1-30 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which

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was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It is not understood what Data I/O, Column Decoders & Selects, Vvfy/VR, Vpp and ROW DECODERS & DRIVERS 160 in Fig. 1; Data I/O, Col Dec & SeL, Vvfy/VR, Vpp, Global Row Decoder & Drivers 260 and Local Row Decoders and Drivers in Figs. 2 and 11; Thi' in Figs. 3B-C; $\Delta V_t \sim 1V$, @ and "Vt Saturation" Region in Fig. 4; @ in Figs. 7A-B; Vppmax and VppTyp in Figs. 8B-F; Vpp1, Vpp2, DL10 and VW4 in Fig. 10A; ΔV_{pp1} and DL10 in Fig. 10B; 1210 in Fig. 12A; D0, D1, D30, D31, Ref I/O Lines, Write & Read Control Logic, I/O Line #1, I/O Line #16, VR, Vpp, Col. Dec & Pass, OTP & Ref. X Dec. & Drivers and X Decoders & Drivers in Fig. 13; Multi-Level verify/Read Circuits 1440, LV-HV Converter, D3HH, D2HH, Column Select N, Source Bias Disable, 1454, 1456, PGM, $\overline{VFY+READ}$ and VFY+Read+Source Bias Disable in Fig. 14 really are since they are not described in the specification.

It is not understood what programming cycles 318 (lines 2 and 8, page 15); Vt1 (lines 9-10, 15, 18, 21 and 28, page 16; lines 27-28, page 17; lines 2 and 6-7, page 18; last line of page 19; lines 3 and 11, page 20; line 25, page 21; lines 8 and 13, page 23; line 7, page 24); Vt2 to Vt15 (throughout the specification); Vpp1', Vpp2' and Vpp3' (lines 23-24 and 28, page 19; lines 1 and 7, page 20; line 9, page 21); Column Line Voltage Vw/SL Voltage Vs (Table 1, page 27); 1040 (line 14, page 31); I0, I1, I2 and I3 (line 16, page 31); VSL0 and VSL3 (line 3, page 32); 1300 (line 2, page 35); 0volts,

Vw1, vw2, Vw3 and Vw4 (last line, page 36); 111b and 0000b (line 3, page 37) really are since they are not shown in the drawings of the present invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-30 are not readable on the drawings of the present invention as well as the specification. Applicant is requested to particularly point out each of elements as recited in claims 1-30 to be read on the respective elements as shown in the drawings of the present invention as well as the specification in order to help the examiner to understand the subject matter of the claimed invention.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-30 are, insofar as understood, rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,882,567. Although the conflicting claims are not identical, they are not patentably distinct from each other because: the write operation for a non-volatile memory as recited in claims 1-30 is obviously read on the write operation for a multi-bit-per-cell (MBPC) as recited in claims 1-22 of U.S. Patent No. 6,882,567.

10. Claims 1-30 are, insofar as understood, provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/982,298. Although the conflicting claims are not identical, they are not patentably distinct from each other because: the write operation for a non-volatile memory as recited in claims 1-30 is obviously read on the write operation for a multi-bit-per-cell (MBPC) as recited in claims 1-18 of copending Application No. 10/982,298.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

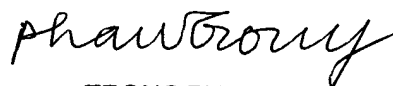
11. Claims 1-30 are, insofar as understood, provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of copending Application No. 11/135,747. Although the conflicting claims are not identical, they are not patentably distinct from each other because: the write operation for a non-volatile memory as recited in claims 1-30 is obviously read on the write operation for a multi-bit-per-cell (MBPC) as recited in claims 1-21 of copending Application No. 11/135,747.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRONG PHAN whose telephone number is (571) 272-1794. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HOAI HO can be reached on (571)272-1777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TRONG PHAN
PRIMARY EXAMINER